

# Frequency Synthesizer F-SCAN5

Firmware Version FS5 V1.0x

## INSTRUCTION MANUAL

This symbol identifies the equipment as type B



**Attention: CONSULT ACCOMPANYING DOCUMENTS**



Ordering information: F-SCAN5 Product id: FTB135

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## WARNING AND NOTES

**WARNING: The F-SCAN4 generates frequencies. The use of other accessories than those supplied with the unit – or described here – could cause malfunctions or become a hazard to the user. The warranty would be forfeit.**

ATTENTION: The unit, all accessories, connectors and cables must be visually inspected for damage frequently. We recommend a yearly functional test by a professional.

ATTENTION: The device's integrated functions allow biological tests and applications described in the publications of Dr. H.R. CLARK. They are also suitable for applications commonly named after R.R. Rife. **The F-SCAN4 is not a medical device. It is used under the sole responsibility of its operator WITHOUT LIABILITY TO THE MANUFACTURER.**

## Preface

One of our prime objectives as a Swiss company is the development and manufacturing of precise and reliable products based on many years of experience. Some of our products are well known and utilized internationally. As a small company we can react fast to changed customer requirements. May your use of the F-SCAN5 be beneficial.

## Introduction

The FREQUENCY SYNTHESIZER F-SCAN5 has been optimized for stationary use. The device is the latest and most advanced member of the F-SCAN product family.

The color touch screen, combined with the latest functional technology, offers a user friendly system with outstanding performance.

The device generates precise sine signals (permanent positive) and square signals (zero – symmetric or permanent positive) and sends them under software control to an output port.

A special feature is the integrated SMART-WAVE. If selected, it will modulate the assigned wave form with a high frequency.

An extra WIDE BAND output port generates sine waves up to 15 Megahertz (15'000'000 Hz) at a lower fixed amplitude to scan and apply at highest frequencies.

**FOUR** outputs are available to provide 4 channels of individual generators with individual frequencies to follow Frequency Specific Microcurrent applications (FSM). The so called DUO+ menu offers the user to work in DUO mode with 2 generators, TRIPLE mode with 3 generators and QUAD mode with 4 generators.

Special accessories, like the UV Flat Magnetic Coil Adapter, can be connected to the PowerPort without a separate amplifier.

The intensity of the sine wave and square wave signals delivered can, depending on the application, either be adjusted manually or automatically.

The new standard OSCA always control the sine wave and square wave signals at the optimum level according to the selected setting.

A TIMER can be assigned to each frequency individually or as a global function.

The settings for the special application modes WOBBLE, ENVELOP, and for the signal amplitudes are also accessible.

The **DIRP**-function (**D**ual **I**ntegration **R**esonance **P**rocedure) can be used to automatically scan for resonance answers to frequencies sent to a user. The procedure can be used in the complete frequency band of the device. Graphical edit functions support the analysis of the DIRP – results.

SUB SCAN mode for specific scans which helps to detect resonants for pre-selected substances.

An EAP (electro acupuncture) capability is integrated for diagnostic use by experts. The optional EAP-SET is required to use this feature.

A broad band application of frequencies (SWEEP) can be selected from an individual touch screen window.

The device provides a significantly larger storage capability than older F-SCAN models. 100 applications of up to 50 frequencies, complete with names and all individual settings, or the complete results of DIRP runs and EAP analysis, can be stored in the "123" section. Additionally, the "DUO+" section storage can be used for up to 100 protocols for multi channel FSM applications. In addition, up to 460 user defined frequency sets (up to 30 values each) can be saved in the F-SCAN5 memory.

DUO+ protocols can be memorized and recalled on a ChipCard in their own section without interfering with the standard single channel programs.

Single protocols can be selected to be copied from the standard ChipCard into the device so that not the entire memory need to be loaded.

CONTINUE: with the continue feature, you can queue as many protocols as you like. Just place the CONT instruction at the end of a protocol and let the machine know which program has to follow.

PROTECTbutton (SETUP menu) to avoid accidental modification of protocols.

A powerful state of the art 32-bit micro-processor controls all functions.

Customized ChipCard-functions support the data transfer between our products F-SCAN5, F-SCAN4, F-SCAN3, F-SCAN MOBILE, F-SCAN COMPACT and the MinDevice.

We are convinced that the touch panel operation will be mastered by all users without problems.

## **OSCA the new standard**

OSCA is the abbreviation for "Output Signal Control Algorithm".

OSCA is a procedure that has been developed by TB-Electronics. This feature can be used to adjust output signal to the application in real time. The very sensitive measuring method that is used in this procedure can measure electrical currents in the micro ampere range and control them according to their waveform and impedance.

Electrical currents that are generated by frequency generators, comply with the impedance of the "consumer" or "load". "Load" is what is attached to the output. In this case impedance means that the "load" does not behave linearly like an electric resistor but like a combination of resistors and capacitors. Therefore, the "load" is dependent on the frequency and even on the activated waveform.

On F-SCAN devices of the upper class you can choose between square waves and sine waves and a frequency range of 0.01 Hz up to over 3 MHz. For the frequency-dependent "load" this means, that with e.g. low frequencies the impact could be huge, even though the electrical current flow is low. High frequencies on the other hand could only have a small impact, even though the electrical current flow is high. And adding to all this, it matters what waveform you choose.

In order for the application to work ideally with an F-SCAN5, OSCA is being introduced for the first time. OSCA can be activated on different levels. You can choose between "OFF", "SENSITIVE", "STANDARD" and "HIGH"; depending on the sensitivity of the "load".

If OSCA is turned off, the signal strength is — according to the amplitude-setting — activated for all the waveforms. As soon as OSCA is activated, the amplitude is continuously controlled according to the current measurement of the electrical current flow (measured in micro amperes). During application, the measured electrical current as well as the amplitude-settings are displayed in real-time in all the menus of the F-SCAN5.

The combination of the DIRP (to record the feedback) and the OSCA is unique and it is going to optimize frequency application once more.

The shipment from the factory includes :



- F-SCAN5 with instruction manual

FTB135

- Wall charger

FTB224



- Stainless steel electrodes

FTB202A



- Application cable for electrodes

FTB308



- 5 sets of self-adhesive pad-electrodes

FTB041



- DIRP sensor

FTB303



- USB cable

FTB223



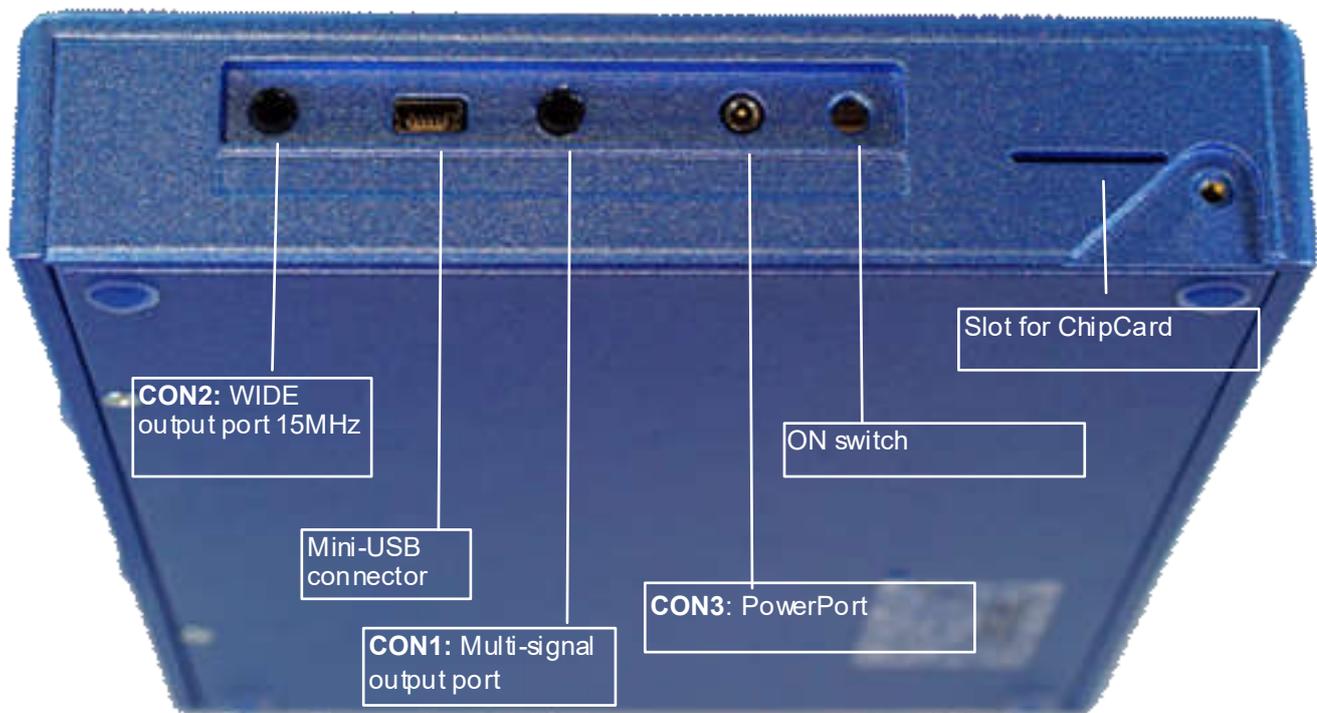
- Set of 5 cables for 4 channel applications



## Elements for operation



A touch on this icon switches the unit OFF.





### Colored plugs on top side of the device for multi-channel connections.

RED = channel A

BLACK = channel B

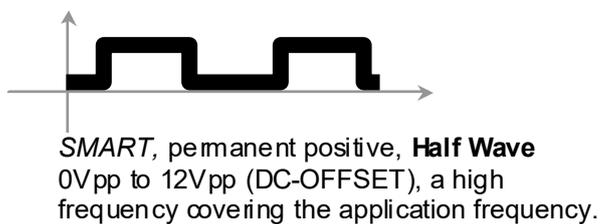
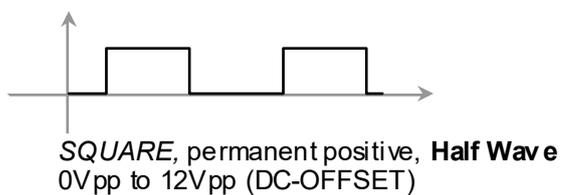
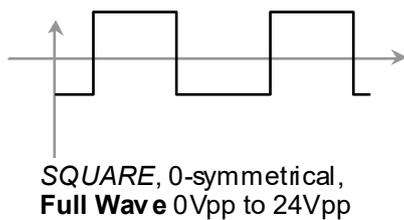
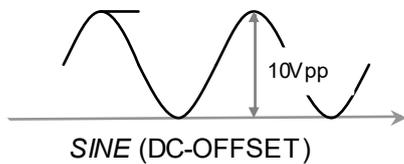
GREEN = channel C

YELLOW = channel D

BLUE = return line for all channels for current/conductivity measurement

The channels that are currently in use are indicated in the “DUO+” mode menu.

### Signal forms delivered to Multi-signal-output port



## Factory settings

Language on screen:	<b>English</b> or <b>German</b>
Application time per frequency:	<b>3:00 Minutes</b> (adjustable between 0:30 and 59:59)
Signal strength:	<b>80%</b> of maximum of 12Vpp (adjustable +/- in steps of 1%)
Signal form:	<b>AUTO</b> (Sine, Square Full Wave, Half Wave, SMART and OFF selectable). AUTO = Square Half Wave if lower than 65000 Hz, Sine above 65000 Hz.

Memory of "123" is empty.

Memory of "DUO+" is empty

Memory of "ABC" is empty and locked.

Connector 3.5mm CON1 :

At this connector is the standard multi signal output available with a bandwidth up to 3 MHz. Standard application parts may be connected.

Connector 3.5mm CON2 :

At this connector is the WIDE output available with a bandwidth up to 15 MHz. Standard application parts may be connected.

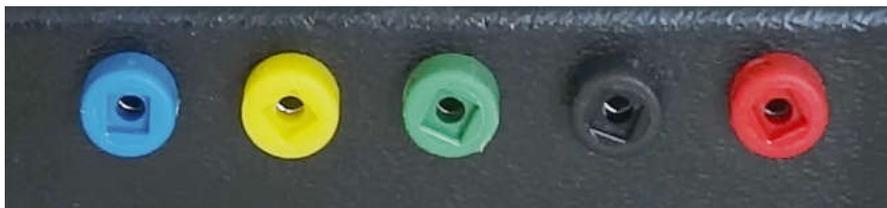
Connector 2.5mm on CON3 :

Connector for the PowerPort. Application parts such as a laser pointer or magnetic field electrode must be connected here. No standard application part may be connected.

RESET: If device cannot be operated from the touch screen due to unknown reasons, the RESET button on the rear panel can be pressed shortly to shut down the unit. Use a "tooth pick" or "match" carefully.

Such effects may happen if the battery has not been charged correctly or a data transfer from software was interrupted.

On top of device: 5 plugs red, black, green, yellow and blue (return/ground) for the 4 channel applications.



- Connect the mini usb cable to the device and plug the wall charger into a wall outlet with a reading between 100 VAC up to 240 VAC.
- Touch the ON switch on the side.

The screen must show the stand by screen with the battery symbol top right flashing yellow .

The information displayed means:

- SERIAL: Serial number of device
- ONS: Number of uses
- Ds Number of DIRPs
- FLASH ID: identifies the type of internal memory.  
FFFFFFFF would indicate a memory defect. The device must then be checked by a professional.
- V1.00B0x Version of software active in the device.

The opening screen, as shown above, offers a menu of 5 or 6 options. One has to be selected in order to continue the setup of the F-SCAN5 for operation. The menu button EAP is enabled only if the device is purchased with the EAP option.

## The menu 123



The menu “123” must be used to create and run individual programs with the ability to enter random frequencies in the range from 0.01 Hertz up to 15 MHz (Megahertz).

The F-SCAN5 offers 100 storage positions for programs of between 1 and 50 frequencies. The end of each program is a value of 0 Hertz (Hz).

Each program can be named individually.

A number of parameters can be assigned to each frequency value:

- Run time (TIME)
- Signal form (Auto, Sine, Square Half Wave, Square Full Wave, SMART and OFF)
- WOBBLE (Output swings around the target frequency)
- ENVELOP (Amplitude oscillates between 0Vpp and maximum)
- Amplitude (signal strength) of sine wave and square wave.

All frequencies are listed on the right hand side of the display in groups of 10. If a frequency is a result of a DIRP, the associated measured value (MV) is also indicated. The selected frequency is displayed in orange. The vertical arrows can be used to show up to 5 blocks of memorized frequencies of a program.

A touch on the icon “123” opens the above menu:

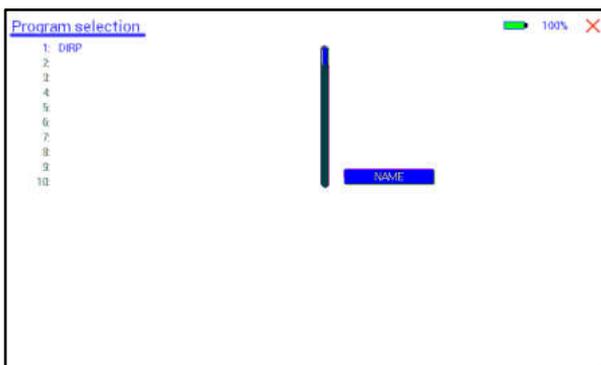
The activated button turns green **123**.

Displayed are:

- the program number “1”
- the program name “DIRP”
- the position of the frequency within the program – between 1 and 50 – here “1”. The left and right arrows can be touched to move to other frequency values of the program.
- “INS” can be touched to shift the present frequencies to the right to insert a new frequency to the program.
- “DEL” can be touched to eliminate the present frequency of 87000.00 Hz from the program.
- “CONT” can be touched to define a protocol or program which shall be used to continue an application. The use of the CONT feature is explained in a special chapter.
- the total runtime of the program of 30 minutes “TT = 30:00”.
- the runtime of the present frequency in minutes : seconds on the below the “clock” icon with “03:00” (3 minutes and 0 seconds).
- the signal form selected “AUTO”.
- the icons “WOBBLE” and “ENV ELOP” remain inactive (their background is white).

### How to select a program from the menu “123”

A touch on the program bar  opens the submenu to select a program from memory, to edit a program name, or to add or delete a program.



10 names of all programs stored in the memory block of 100 positions are displayed in the blue field. The present program number and name are shown in blue. All other (unselected) programs are shown in black. A cursor line is visible behind the name.

The vertical scroll bar can be used to access program positions 11 to 100.

**X** A touch on the red cross in the upper right corner closes this menu.

Any touch on a position 1: to 10: selects the associated program.

A touch on **NAME** opens the keyboard and it is possible to modify the name of the program with up to 20 characters.



**X** = close keyboard

**←** = move left and erase

**CLEAR** = erase entire line

**ENTER** = close keypad and store new entry.

**^** = switch to capital letters.

To cut, copy or paste an existing entry, just touch the program line and remain for approximately two seconds until the “copy-paste-cut” sub menu opens.

After this, release the touch and proceed with the intended function.

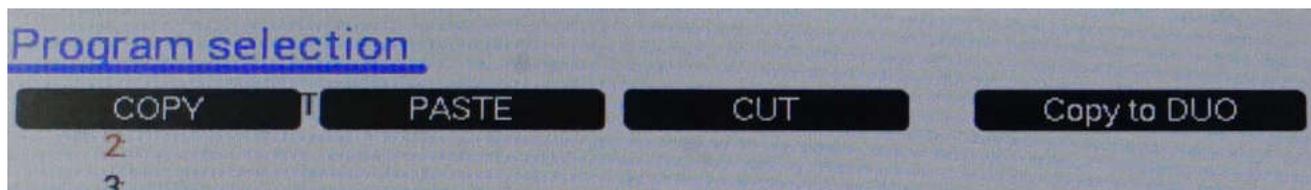
COPY copies the entry into the paste buffer.

PASTE copies the contents of the paste buffer into a selected memory position.

CUT deletes the entry.

COPY TO DUO copies the selected program to the “DUO+” section so that a standard single channel program can also be used as DUO, TRIPLE or QUAD application.

To close the “copy-paste-cut” sub menu, press the **X** icon top right.



Example for copying the entry from program 1 into program 5:

- touch program line 1 (here DIRP Test) and remain for 2 seconds
- when “copy-paste-cut-Copy to DUO” sub menu opens, release and press “COPY”.
- Select another program line, for example “5:” and keep it touched until the sub menu opens.
- Touch “PASTE”.

After this procedure, the program “1:” and program “5:” have the same name and contents.

## How to input a frequency value

 The arrows in the menu “123” are used to select the position (1 to 50) for the new frequency value to be inserted in the opened program.

Next, the present frequency value has to be touched .

A numerical key block opens and the new value can be entered.

A touch on the ENTER-key  saves the input

 sets the entry to 0.

 = close numerical key block



## The properties of frequencies

Runtime



The factory setting of the runtime per frequency is 3:00 minutes. It can be changed after a touch on the above icon and the input of the minutes and seconds to be applied.

A touch on the ENTER-key  saves the input.

Signal form



The signal form delivered to the “OUTPUT PORT” can be switched from AUTO to SINE, SQUARE HALF WAVE (DC-OFFSET), SQUARE FULL WAVE, SMART or OFF with successive touches on this icon. The setting AUTO delivers SQUARE HALF WAVE (DC-OFFSET) signals with frequency values below 65000 Hz and SINE signals with values above 65000 Hz. The currently delivered wave form is indicated in the icon.

## The menu DUO+



The menu “DUO+” must be used to create and run individual programs with the ability of entering random frequencies in the range from 0.01 Hertz up to 15 MHz (Megahertz). Depending of the mode, two, three or four frequencies are output simultaneously when a program is activated with START.

The button DUO+ with the number indicates how many channels are in use.

**DUO+ 2** indicates two channels and the red, black and blue output plugs on the screen show where to connect the application parts.

**DUO+ 3** indicates three channels and the red, black, green and blue output plugs on the screen show where to connect the application parts.

**DUO+ 4** (as in the image) indicates four channels and the red, black, green, yellow and blue output plugs on the screen show where to connect the application parts.

NOTE: the blue plug is used for conductivity measurement and is needed only for this. If no measurement is necessary, the blue connection is not necessary.

The F-SCAN5 offers 100 storage positions for programs of between 1 and 50 frequencies. The end of each program is a value of 0 Hertz (Hz). This means, that in DUO mode when two frequencies are output simultaneously, 25 sets of two are in use. In TRIPLE mode its 16 sets and in QUAD mode it is 12 sets.

Each program can be named individually as already described in the chapter “The menu 123”. In DUO+ mode, it is not possible to set properties such as WOBBLE, ENVELOPE or waveform.

The program selection in DUO+ mode works in the same way as in the chapter “The menu 123”.

To cut, copy or paste an existing entry, just touch the program line and remain for approximately two seconds until the “copy-paste-cut” sub menu opens.

After this, release the touch and proceed with the intended function.

COPY copies the entry into the paste buffer.

PASTE copies the contents of the paste buffer into a selected memory position.

CUT deletes the entry.

COPY TO 123 copies the selected program to the “123” section so that a multi channel program can be used also as a single channel application.

To close the “copy-paste-cut” sub menu, press the **X** icon top right.



## Current indicator and OSCA for the “123 menu”

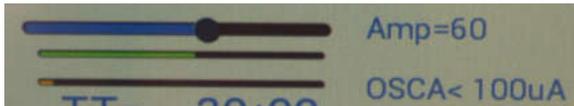


The bottom bar graph displays the measured value of the electrical current which flows through the output at connector CON1. The current flow for non-linear “loads” is dependent from

- the electrode type
- the frequency
- the wave form
- the selected amplitude

This value gives a real feedback of the electrical “load” at the output. The current indicator is used for the OSCA function which controls the output amplitude at the optimum value.

If OSCA is selected in the setup menu, the amplitude slider and current indicator are displayed differently:



The amplitude cannot be modified any more. As long as the current measuring system does not “see” a valid current flowing, the amplitude is set to a standard of 60%. As soon as a valid current is measured, the amplitude is automatically controlled by the algorithm which is dependent of the OSCA level. This level can be set to

- SENSITIVE
- STANDARD
- HIGH
- MAX

It is recommended to use “SENSITIVE”.

## How to start, pause, or stop a program

Touch the icon **START** to start a program.

Touch the icon **PAUSE** to initiate a pause.

Touch the icon **STOP** to end a running program.

Any attempt to change the menu while a program is running will cause the system to return to menu “123” immediately.

## The menu SWEEP

A touch on the icon "SWEEP" opens the screen to start the broad band frequency swing "SWEEP".



SWEEP can be used to swing through a broad band of frequencies between a lower limit "Fmin" and an upper limit "Fmax" for a limited time (standard 20 minutes).

The step size "DELTA F" from value to value is defined automatically. "Fmin" and "Fmax" can be set by touching the icons **Fmin** and **Fmax**.

The signal form is "AUTO", which means "SQUARE DC-OFFSET" through 65000 Hz and "SINE" above that value.

The amplitude is as selected in menu "123". If OSCA is set, the amplitude is set to 60%. To modify the amplitude, OSCA must be turned off.

The red and blue marking on the right side of the screen indicates the output which has to be used.

Touch the button icon **START** to start the procedure. The output moves from "Fmin" up to "Fmax", turns around to move back to "Fmin", and so on, until the time of 20 minutes is up. The activity is simultaneously displayed on the screen.

A touch on the icon **STOP** stops the procedure at any point.

## The menu DIRP

A touch on the button **DIRP** opens the screen for the automatic resonance analysis "DIRP". "DIRP" stands for: **D**ual **I**ntegration **R**esonance **P**rocedure



"DIRP" registers resonances to frequencies applied in steps of "DELTA F" within the limits between a lower value "Fmin" and an upper value "Fmax".

SINE signals will be assigned automatically for the analysis. IMPORTANT: THE AMPLITUDE SETTING MUST BE ASSIGNED WITH THE AMPLITUDE SLIDER. IT IS RECOMMENDED TO SET THIS VALUE TO 100% TO ACHIEVE RESULTS THAT CAN BE COMPARED. ONLY IN CASES OF HIGH SENSIBILITY, USE LOWER VALUES FOR THE AMPLITUDE.

OSCA HAS NO EFFECT ON DIRP.

The red, black and blue marking on the right side of the screen indicates the output that has to be used with the finger sensor FTB303.

The analysis is based on two readings:

1. MV = **M**easured **V**alue of a resonance
2. CV = **C**onductivity **V**alue

The Conductivity Value is a personal constant of the individual analyzed. It should read between 5% and 25% as a base for useful results of the analysis. The Measured Values are shown as a green vertical bars or lines in the graph.

After completing a "DIRP" run, the algorithm calculates the level of a horizontal line (violet) in the graph, called the **C**lipping **L**evel = CL. It separates the 10 highest resonance peaks (HITS) of the graph from the rest. If required, the CL line can be moved up or down manually.

**Fmin** touch to set "Fmin" (Range 50 Hz to 2 MHz)

**Fmax** touch to set "Fmax" (Range 50 Hz to 2 MHz)

**Delta F** touch to set "DELTA F" (range 1Hz to 10000 Hz)

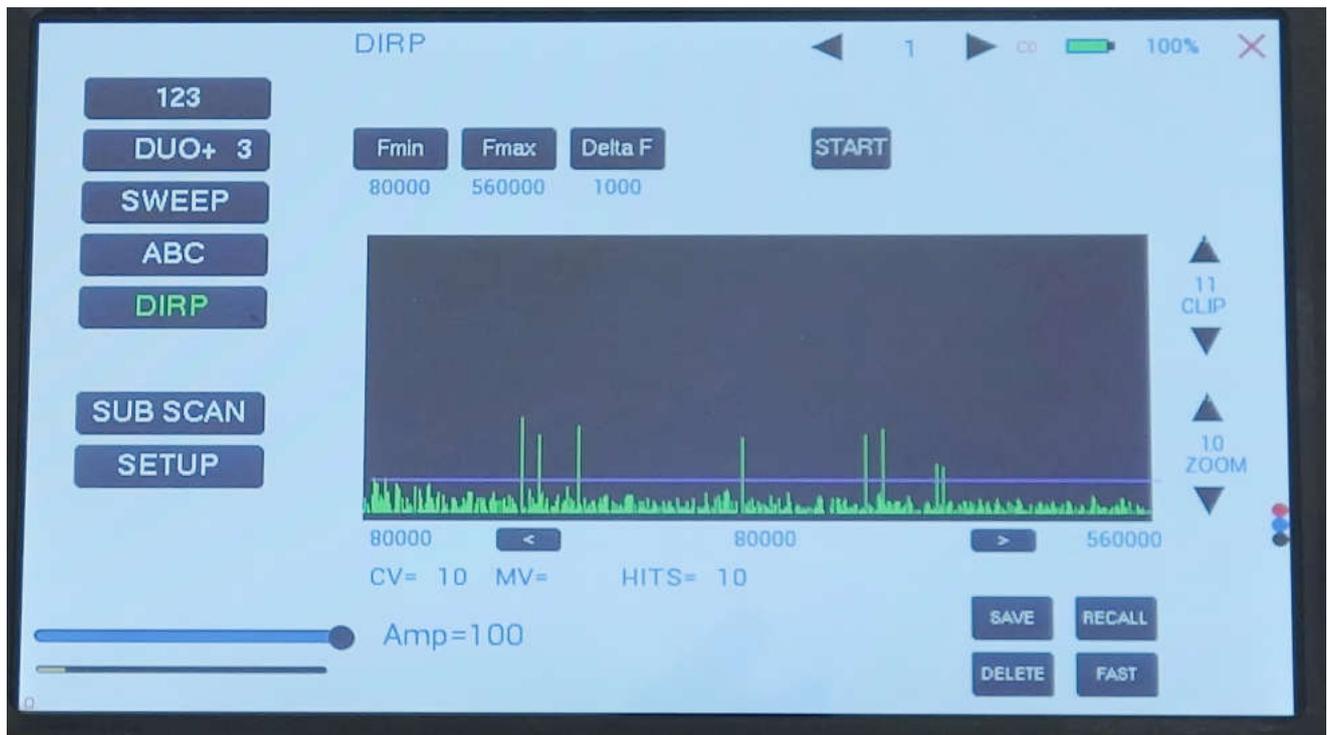
**RECALL**

touch to recall a previously stored complete "DIRP" analysis from temporary memory.

**SAVE**

touch to assign the previously made DIRP to the selected program.

Example of a "DIRP" analysis recalled from memory:



The display on the screen shows all details of the recalled analysis, including the settings for "Fmin", "Fmax", "DELTA F" and the Clipping Level "CL = 13" (the violet line), where it separates 10 HITS (measured values of resonances) from the remaining graph.



You can use the arrows to load a program.



Touch to move within the graph in the direction of Fmin to read the CV, MV and CL of individual resonances.



Touch to move within the graph in the direction of Fmax to read the CV, MV and CL of individual resonances.



Touch to move the violet line upward, thereby reducing the number of HITS (MVs).



Touch to move the violet line downward, thereby increasing the number of HITS (MVs).

Touch to vertically zoom the graph in steps from 0.0 to 2.0 to improve the reading. The Clipping level will be recalculated to match the moves. Default setting of zoom is 1.0.

**DELETE**

Clear graph.

## How to prepare for a DIRP and run it

The settings shown on page 18 of this manual can be used to perform a DIRP analysis in the frequency range between 80000 Hz and 560000 Hz:

1. Attach the DIRP sensor FTB303 following the instructions shipped with it to connector OUT as indicated on the screen (red, black and blue circles).
2. Connect the red wire to the cylinder. Hold the cylinder in the left hand.
3. Touch the button **START** to start the analysis
4. Wait until the graph line reaches Fmax and completes the procedure. Touch the button **STOP** to end the analysis at any point. During a DIRP procedure, the reaction time of a touch may take up to 1 second.
5. Touch the button **SAVE** to store the complete DIRP results in the selected program position. This will overwrite any data previously stored in that position.

## EAP (ELECTRO-ACUPUNCTURE) measurements



THE EAP-CAPABILITY IS AN OPTIONAL FEATURE TO BE USED BY WELL TRAINED SPECIALISTS ONLY. THE SOFTWARE NEEDED TO OPERATE EAP REQUIRES A RELEASE CODE FROM THE FACTORY OR A SALES POINT. A STYLUS SET WITH CABLE MUST BE PURCHASED (OPTION "FTB211").

The EAP – Stylus is required to touch and measure the Conductivity Value (CV) at the acupuncture points of the lymphatic system. The set of measurements is stored for reference in the active program position (one of the 100 available).

### Preparation:

Connect the EAP-cable to the sensor port of the F-SCAN5 on the left side of the device.

Connect the EAP – Stylus to the blue lead of the EAP-cable.

Connect a handheld or foot electrode with the red lead of the EAP-cable.

Start the F-SCAN5, touch the button icon **EAP**.

### EAP- functional test

Touch the tip of the EAP – stylus to the handheld or foot electrode to cause an electrical short. The measured value must change to 99 accompanied by an audible signal, if this is activated. The value 99 will be stored in the first line LY (lymph point) under the left hand. The cursor-selection moves to the second line LU (lung). The value 99 must be touched to remove it and to set the cursor-selection back to line one awaiting a real measured value.

## How to complete an EAP-table

Starting with the left hand, each acupuncture point must be measured top down. Continue with the right hand, the left and right foot. If the micro-processor identifies a measured value as EAP-like, it appears in the table and the cursor-selection moves on to await the next value. If a point must be re-measured, the previous value disappears after a touch on it.

NOTE: The procedure takes time. The measured value shown under the table block must have returned to 00 before the next point can be measured.

All measured values between 45 and 55 are considered to be within the "NORMAL RANGE". Values below 45, or above 55, will be shown in red in the table.

In the SETUP menu it is possible to adjust the sensitivity of the stylus. This allows the user to set the F-SCAN5 to the EAP sensitivity which is well known from other manufacturers.

The EAP menu can be switched from "HAND" to "FOOT" with the bottom right button.

The button CLEAR sets all entries to zero and re-starts at the first position of the page.



## The menu SUB SCAN

A touch on the button **SUB SCAN** opens the screen for the automatic resonance analysis “DIRP” with a specific substance scanning. The substance scanning is performed according to the so called C-LIST which means Clark List and includes the pathogen list with associated frequencies. The list is memorized in a nonvolatile memory and simple procedures for computer experts to download updated or individual lists exist.



The idea of SUB SCAN is that the user makes a specific DIRP which allows to detect specific groups of entries of the C-List. Therefore, the user must select a single group (for example “Virus”) before the button **FORWARD** can be selected. It is possible to enable/disable one, many or all groups.



All selected group-entries are indicated in the list in orange. All entries can be viewed by using the vertical scrollbar or arrows up/down. To unselect a group, just press the selection again.



The values for Fmin, Fmax and Delta F will be set automatically according to the selected group. A touch on any of these buttons will have no effect. All other buttons can be used as described in the DIRP chapter.

After a SUB SCAN procedure (also known as “selective DIRP”), all frequencies that belong to a group are filtered. When saving, all matching frequencies of the selected group will be saved in the selected program. Since some frequencies share the same or are very close to other groups, these matching pathogens will also be memorized.

If a frequency in a program matches a C-List entry, the pathogen name is indicated in the “123” menu.

## The menu SETTINGS



A touch on the SETUP button opens a menu for global settings. All settings will be memorized in a nonvolatile memory of the device.

**BRIGHTNESS** set this slider to the desired backlight

**LANGUAGE** a touch on the flag switches to the next pre-installed language. Languages are English, German, Czech, Polish, Hungarian and Swedish. For some languages, only individual words are indicated in the selected language. For other languages, the ABC list entries are also translated.

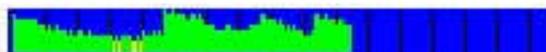
**EAP SENSE** set this slider to the desired sensitivity. The standard setting is 20/6. The value of 20/1 is the highest sensitivity, 20/20 is the lowest sensitivity.

**SOUND** set this slider to the volume of sounds

**OSCA** Set the OSCA slider to the desired value. If OSCA shall be used, it is recommended to set the value to SENSITIVE. If the output shall not be current controlled but at a fixed voltage, turn OSCA off (most left). If OSCA is enabled, AUTO-R is set to OFF automatically.

AUTO-R	<p>A touch on the icon switches this unique function ON or OFF. When sw itched OFF, the amplitude of SQUARE w ave signals and SINE w ave signals w ill be as assigned during the setup for all frequencies of a program.</p> <p>When sw itched ON, the microcontroller calculates the signal strength of SQUARE w aves on the base of each frequency value follow ing a physiological algorithm. The results override the original amplitude settings.</p> <p>If AUTO-R is enabled, OSCA is automatically set to OFF.</p>
GLOBAL TIMER	<p>A touch on the icon switches GLOBAL TIMER ON or OFF. When sw itched OFF, the timer settings in the “123” menu may be set individually for each frequency.</p> <p>When sw itched ON, the timer settings in the “123” menu is the same for all 50 frequencies of the program. The global timer becomes active, w hen the timer setting in the “123” menu is modified.</p>
GLOBAL WOBBLE	<p>GLOBAL WOBBLE ON or OFF. If enabled the w obble settings w ill be incurred for all frequencies of a program.</p>
GLOBAL ENVELOPE	<p>If GLOBAL ENVELOPE is activated, and the signal form is SQUARE or SINE, the amplitude w ill slowly oscillate betw een 0 and the value assigned to the frequency. The background color of the button changes to green w hen activated.</p>
POWER SAVE	<p>If enabled, the backlight turns to low est possible setting after 30 seconds. Any touch on the screen sets the backlight to its preset value. The pow er save function saves battery charge during an application so that it is possible to ensure a longer run time.</p>
LOOP	<p>LOOP ON or OFF. If enabled, a program started from „123“ or „ABC“ w ill loop forever. The only w ay to stop it is w ith the STOP icon.</p>
AUTO OFF	<p>If the text "OFF" is visible inside this button, the AUTO POWER OFF function is disabled. When touching the button, the number of minutes after which the device sw itches off automatically w ill increase in one minute steps. The automatic pow er off function w ill be restarted if the device is operated, a program is running or the device is under softw are control. The remaining time is being displayed in seconds on left/bottom of the screen.</p>
PROTECT	<p>Button to avoid accidental modification of frequencies in protocols. When activated (green), it is not possible to modify frequency values in programs or protocols.</p>

Battery history indication



A blue field w ith green vertical lines is displayed on the top of the screen. If the color of the lines turns yellow or red, the battery charge is poor and it is recommended to use the charger for recharge of the battery. The distance betw een tw o vertical gray lines indicates a slot of one hour.

A fully charged battery should be good for 3.5 to 5.5 hours of independent operation.

The charge time for a fully discharged battery is approx. 6 hours.

## CHIPCARD option

An option to increase independence and flexibility, using two types of ChipCards to transfer data between members of the F-SCAN family, was designed into the F-SCAN5.

Program data consisting of frequency values can only be shared between F-SCAN4, F-SCAN3, F-SCAN COMPACT and the MinDevice using the ChipCard.

The use of the ChipCard PLUS allows the transfer of all types of program data sets to and from F-SCAN4, F-SCAN3 and F-SCAN MOBILE.



Insert the ChipCard vertically into the reader on right hand side of the device.

The menu ChipCard opens and offers 4 choices:

- Touch the first line to save all of the 100 program positions, which hold frequencies only, on the ChipCard for use in an F-SCAN COMPACT.
- Touch the second line to overwrite the 100 program positions of the F-SCAN5 with the data from an F-SCAN COMPACT. DIRP- or EAP-data sets previously stored in program positions in the F-SCAN5 will be lost.
- Touch the third line to store the frequency values of the program position presently open in the F-SCAN5 on the ChipCard for use in a MinDevice.
- Touch the fourth line to only copy one protocol from the ChipCard. A selection menu opens and the selected program is copied to the first free program position. If no free program is available, program number 1 is used.

Removal of the ChipCard from the reader resets the F-SCAN5 to the menu active when the ChipCard was inserted.

## Use of the ChipCard PLUS

The following menu opens when a ChipCard PLUS is inserted into the reader:

- Touch the first line to store the content of the memory with the 100 program positions on the ChipCard PLUS.
- Touch the second line to overwrite the 100 program positions of the F-SCAN5 with the data from the ChipCard PLUS.
- Touch BACKUP ABC LIST to store the ABC list on the ChipCard PLUS.
- Touch RESTORE ABC LIST to copy the ABC list from ChipCard into the device. An already installed ABC list will be overwritten.

## How to format, integrate and use programs from other sources

A touch on the button **ABC** opens the menu to reach and operate frequency programs generated outside the F-SCAN5. Up to 460 sets, of up to 30 frequencies each, can be transferred to the “ABC” memory block using either the software F-SCANT3, or a common terminal program.



As a factory setting the “ABC” function is locked. A release code can be acquired from the factory or from an F-SCAN sales point by email.

The frequency programs must be written with a text editor in the following format:

```
(PROGRAMM 1)10,100,1000,10000;
```

```
(PROGRAMM 2)20,30,40,50,60,100;
```

The program name (maximum of 20 characters – letters of the alphabet only) must be set in parenthesis. It is followed by 1 to 30 frequency values, separated by comma. The end of the sequence has to be marked by a semicolon “;”.

A carriage-return-line-feed = 13-10 must separate the program lines.

As soon as the list of frequency programs is generated and transferred to the F-SCAN5, it can be accessed on the unlocked menu “ABC”.

Fewer properties than in the menu “123” can be assigned to individual frequency values here. A change of the timer will be valid for all frequencies stored in the memory block of 460 programs. The amplitude of square signals can be adjusted up or down with the amplitude slider.

A touch on program or name opens the screen with 20 program lines. A touch on any line opens the program for use. Missing positions can be reached with touches on the up and down arrows of the scroll bar moving always a full page.

Any program can be copied from the "ABC" memory block of 460 programs to the "123" memory block of 100 programs with a touch on the button **SAVE**. The routine requests the input of the position number to copy to. Once saved in the "123" routine the program name can be edited and all property assignments to frequencies offered there are applicable.

The altered program can thus be transferred to other F-SCAN models with the help of the ChipCard.

### **How to start, pause, or stop a program**

Touch the icon **START** to start a program.

Touch the icon **PAUSE** to initiate a pause.

Touch the icon **STOP** to end a running program.

Any attempt to change the menu while a program is running will cause the system to return to menu "ABC" immediately.

A number of parameters can be assigned to each frequency value:

- Run time (TIME)
- WOBBLE (Output swings around the target frequency)
- Amplitude (signal strength) of square wave.

All frequencies are listed on the right hand side on the display in groups of 30. The selected frequency is displayed in orange.

## Technical data

Case	Painted plastic enclosure
Dimensions	205 mm x 140 mm x 30 mm
Color touch screen	154 mm x 85 mm; 800 x 480 pixel
Min. frequency selectable	0.01Hz
Frequency stability	30 ppm
Memory	100 open positions for up to 50 frequency values including individual properties assigned to each value.
Flash-memory for a list	max.460 entries of up to 30 frequencies each
Power supply for device with battery	Plug-in type: 100–240 VAC, 50–60 Hz, Output: 5VDC, 600mA (minimum)
Multisignal-output port CON1	Sine signal, permanent positive (DC-OFFSET), Amplitude adjustable from 0 to 10V <sub>ss</sub> Square signal, 0-symmetric (Full wave), Amplitude 0 to 24V <sub>pp</sub> . Square signal, permanent positive (DC-OFFSET), Amplitude 0 to 12V <sub>pp</sub> .
Frequency range	Sine 1Hz to 3 MHz, Square guaranteed to 100 kHz. <b>See list below for typical dependency of amplitude on the frequency value.</b>
Frequency range output CON2 WIDE	Sine 1 Hz to 15 MHz, 5V <sub>pp</sub>

### Typical values of amplitudes as function of frequency

Frequency [Hz]	Square 50%	Square 80%	Square 100%	Sine
0.1	3.7V <sub>pp</sub>	7.7V <sub>pp</sub>	14.2V <sub>pp</sub>	14.2V <sub>pp</sub>
1	3.7V <sub>pp</sub>	7.7V <sub>pp</sub>	14.2V <sub>pp</sub>	14.2V <sub>pp</sub>
10	3.7V <sub>pp</sub>	7.7V <sub>pp</sub>	14.2V <sub>pp</sub>	12.8V <sub>pp</sub>
100	3.7V <sub>pp</sub>	7.7V <sub>pp</sub>	14.2V <sub>pp</sub>	12.6V <sub>pp</sub>
1000	3.6V <sub>pp</sub>	7.4V <sub>pp</sub>	14.2V <sub>pp</sub>	12.6V <sub>pp</sub>
10000	3.6V <sub>pp</sub>	7.4V <sub>pp</sub>	14.0V <sub>pp</sub>	12.6V <sub>pp</sub>
100000	3.6V <sub>pp</sub>	7.3V <sub>pp</sub>	13.4V <sub>pp</sub>	12.2V <sub>pp</sub>
1000000	3.6V <sub>pp</sub>	7.3V <sub>pp</sub>	12.2V <sub>pp</sub>	10V <sub>pp</sub>
2000000	not defined			6.5V <sub>pp</sub>
3000000	not defined			4.0V <sub>pp</sub>

Changes to improve or simplify the product will be made without prior notice

## Declaration of Conformity / Konformitätserklärung

Hiermit erklären wir:/Herewith we declare:

TB-ELECTRONICS GmbH  
Poststrasse 4  
CH-9443 Widnau

dass das folgende Produkt mit der Bezeichnung/that the following product with the marking  
*F-SCAN4* Frequency Synthesizer

in alleiniger Verantwortung auf dass sich diese Erklärung bezieht mit der folgenden Norm übereinstimmt:  
declare under our sole responsibility to which this declaration relates is in conformity with the following standard:

EMC: 89/336, 92/31, 93/68  
Harmonisierte Standards: EN 61326-1  
Ratings, characteristics: 5VDC, 300mA



Widnau, 23 - 10 - 2019

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rechtsverbindliche Unterschrift/legally binding signature